



ARPA-E's 37 Projects Selected From Funding Opportunity Announcement #1

Project Title: Breakthrough High Efficiency Shrouded Wind Turbine
Organization: FloDesign Wind Turbine
Funding Amount: \$8,325,400
Website: <http://www.flodesignwindturbine.org/>

Brief Description of Project

FloDesign Wind's Mixer Ejector Wind Turbine (MEWT) is a new, shrouded, axial-flow wind turbine capable of delivering significantly more energy per unit swept area with greatly reduced rotor loading as compared to existing horizontal axis wind turbines and current duct augmented wind turbines. The lower loads, smaller rotor and shrouded concept provide significant opportunity for mass production and other cost reduction manufacturing techniques. As a result, the new, MEWT design has the potential to be the next generation wind turbine by providing significantly lower first and life costs compared to traditional horizontal axis wind turbines. Moreover, the MEWT's size, cost and safety advantages enable distributed applications that have thus far proven challenging for traditional turbine designs to economically address.

Why ARPA-E Funding and Not Private Capital

ARPA-E permits an accelerated introduction of advanced materials and aerodynamics that would not be possible with private capital alone. In addition, ARPA-E's commitment, support and technical diligence greatly assisted FloDesign Wind to raise \$34.5M in private capital to compliment the award. This partnership between public and private sectors significantly reduces risk and enhances the chance for successful commercial deployment of this critical renewable technology

Uniqueness/Benefits of Technology

FloDesign Wind's MEWT benefits are an outgrowth of the device's high efficiency and unique operating configuration. Specifically, the MEWT delivers 3 or more times the power extraction efficiency for the same size rotor or the same power with 50% of the rotor size. Additionally, these efficiencies are reached while shifting up to 70% of the axial loads off the rotating components. This leads to an inherent robustness and opens the door for additional durability through integration of a gear train-free embedded generator in the shroud structure.

Addressable Market & Potential Customers

FloDesign Wind Turbine has indentified four basic wind applications:

- Utility-scale wind power plants, both land-based and offshore
- Community-owned projects, which often produce power for local consumption and sell bulk power under contracts
- Institutional and business applications
- Off-grid home installations and behind-the-meter farm/ranch/home systems.



For inquiries, contact:

Email:

ARPA-E@hq.doe.gov

Website:

<http://arpa-e.energy.gov/>

Key Team Member Bios

Lars Andersen, FDWT CEO was President of Vestas China, where he was responsible for leading and growing the company into the largest multinational-owned wind turbine supplier in China. He has over 20 years of experience in the energy industry. He started his career in energy at ABB Power Generation in Switzerland and then spent 10 years with Hydro-Electric in various managerial roles. Dr. Walter Presz Jr, Founder and Chief Technology Officer is a licensed professional engineer with over 40 years of industrial, academic and consulting experience.

He spent 20 years at Pratt & Whitney in CT directing the effort in Propulsion Installation Technology. Dr Presz is one of two inventors of FDWT's mixer ejector wind turbine technology.

Bob Dold, Director of Engineering and the program's Principal Investigator has more than 18 years of design engineering experience, including implementing mixer ejector technology on multiple programs. Prior to FDWT, Bob spent 12 years with United Technologies Research Center, and in his current role manages the entire design development process at FloDesign Wind Turbine.

Miscellaneous

FloDesign Wind closed a \$34.5 million Series B financing round in December, 2009. FloDesign Wind Turbine Series A venture investor include Kleiner, Perkins, Caufield and Byers was joined by a syndicate of three new major investors: Goldman Sachs Investment Partners, Technology Partners and VantagePoint Venture Partners.

Testimonials

FloDesign Wind turbine is delighted to have received this award as it came at a most opportune time; FDWT was deep into R&D and seeking to commercialize their concept. However, the private sector refers to this transition as the "Valley of Death" since private institution funding is hard to achieve at such an early development stage. Due to ARPA-E's commitment to assisting inventors develop cutting edge technology, ARPA-E provided the right amount of capital to excite private sector investors. We at FDWT believe this is the perfect marriage between government and the private sector.



For inquiries, contact:

Email:

ARPA-E@hq.doe.gov

Website:

<http://arpa-e.energy.gov/>